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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Joe Mihelcic

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EXAMINER

LAM, HUNG H

ART UNIT

PAPER NUMBER

2622

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/005,166	Applicant(s) MIHELIC, JOE	
	Examiner Hung H. Lam	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 4-13, 16 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 14-15 and 18-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered (added) claims 4-9 have been renumbered as 14-19 respectively.

Response to Amendment

2. The amendments, filed on 12/21/05, have been entered and made of record. Claims 1-19 are pending. Claims 14-19 are added to the examined claims 1-3.

However, only claims 1-3, 14, 15 and 18-19 are readable upon the elected species 4. Claims 16-17 are readable on the non-elected species of Figs. 9A-9B. Therefore, claims 16-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Response to Arguments

3. Applicant's arguments filed 12/21/05 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the light sources may be horizontally shifted along an essentially horizontal rail, such that the positions of the light sources relative to the camera may be readily adjusted depending on the size of the surface to be recorded and the light sources which are independently adjustable relative to the camera via means for horizontally shifting the camera and lasers along an essentially horizontal rail) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With regarding Kakiuchi reference, the Applicants argue that there is not teaching or suggestion the light sources may be horizontally shifted along an essentially horizontal rail, such that the positions of the light sources relative to the camera may be readily adjusted depending on the size of the surface to be recorded. The Examiner respectfully disagrees. Claim 1 only requires an essentially horizontal rail... and said rail having means for horizontally shifting said camera and said lasers along said rail." The Examiner has only relied on the Kakiuchi reference to teach a 3D camera with lasers light (Kakiuchi: Figs. 1-2; lasers 14, 14a and 14b; Col. 1, Ln. 58- Col. 2, Ln. 10; Col. 4, Ln. 47-51; Col. 5, Ln. 36-50). The limitation of horizontally shifting a camera along a rail is taught in Chapman reference. Chapman teaches a camera crane wherein a rail/ track (60) permits a mounted camera to slide horizontally backward and forward (Fig. 1; Col. 4, Ln. 43-55). Therefore, Kakiuchi as modified by Chapman teaches a "rail having means for horizontally shifting said camera and said lasers along said rail."

The Applicants further argue that Kakiuchi in view of Chapman fails to teach or suggest the light sources or laser which are essentially parallel to the optical axis of a camera, and which are independently adjustable relative to the camera via means for horizontally shifting the camera and lasers along an essentially horizontal rail. The Examiner respectfully disagrees. Kakiuchi teaches six lasers light surrounding a photographing lens of a camera and thus the lasers (14) must be parallel to a main optical axis of the camera (Kakiuchi: see the layout of lasers 14 and lens 11 in Fig. 1; Col. 4, Ln. 40-58). Further more, the limitation wherein the Applicants claims “the light sources and which are independently adjustable relative to the camera via means for horizontally shifting the camera and lasers along an essentially horizontal rail” is not specifically required in claim 1. As stated above, the Examiner has relied on Chapman teaching to slide a mounted camera horizontally backward and forward along a rail/track (Chapman: 60) of a camera crane (Chapman: Fig. 1; Col. 4, Ln. 43-55).

In view of the above, the Examiner believes that the broadest interpretation of the present claimed invention does in fact read on the cited reference for at least the reasons discussed above and as stated in the detail Office Action as follows. This Office action is now made final.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-3, 14, 15 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakiuchi (US-6,822,687) in view of Chapman (US-6,450,706) and further in view of Ellenby (US-6,690,370).

With regarding **claim 1**, Kakiuchi discloses a data acquisition apparatus for scanning a surface to record digital images thereof and to record data for determining three-dimensional coordinates thereof (Col. 1, Ln. 58-63), said apparatus comprising:

at least one camera for recording said digital images of said surface, said camera having an optical axis (Figs. 1-2; Col. 1, Ln. 57-62; Col. 4, Ln. 66-67 – Col. 5, Ln.1-15);

at least two lasers for marking points in said digital images for determining said three dimensional coordinates of said surface (Figs. 1-2; lasers 14, 14a and 14b; Col. 4, Ln. 47-51; Col. 5, Ln. 36-50), said lasers having optical axes, said optical axes of said camera and said lasers being essentially parallel (see Figs. 2 and 8);

However, Kakiuchi fails to teach:

an essentially horizontal rail for mounting said camera and said lasers, and said rail having means for horizontally shifting said camera and said lasers along said rail;

at least one essentially vertical post attached to said rail by means for rotating and horizontally shifting said rail, said post having means for vertically shifting said rail;

at least one moveable platform for mounting said posts and for positioning said camera and said lasers proximate to said surface. However, the limitations are well known in the art as shown in Chapman.

In the same field of endeavor, Chapman teaches a camera crane wherein a rail/ track (60) provides a means to slide a mounted camera horizontally backward and forward (Fig. 1; Col. 4, Ln. 43-55). Chapman further teaches that a boom arm (44) and the track (60) are pivotally mounted to a post assembly (42) and rotated around a pivot joint (46) in order to vertically changing the height of the rail/track (Fig. 1; Col. 3, Ln. 44-49). Moreover, a post assembly (42) is connected to the movable platform and thereby permitting the camera crane to move closer or farther to the photographing objects (Fig. 1; dolly platform 28; Col. 3, Ln. 35-38). In light of the teaching from Chapman, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the three dimensional camera of Kakiuchi by having the camera crane support taught in Chapman in order to rise, move, or rotate the camera vertically/horizontally in different directions. The modifications thus permitting a camera operator to have completely control over all camera movement and thereby a separate leveling heads or other accessories are not needed.

Kakiuchi teaches a camera capturing and recording three-dimensional image (Col. 1, Ln. 58-63; Col. 5, Ln. 25-35). Further more, Kakiuchi teaches that the system control circuit (Fig. 2; 35) of the camera is interfaced with an external computer (Fig. 2; computer 41; Col. 5, Ln. 27-32). Chapman teaches that a single camera operator has complete control of all needed camera movements (Col. 13, Ln. 52-55).

Kakiuchi in view of Chapman teaches a data acquisition equipment (computer 41) for adjusting said platforms, said posts, said rail, said camera, and said lasers. Kakiuchi and Chapman fail to teach recording position data for said platforms, said posts, said rail, said camera, and said lasers, and, for recording said digital mages.

In the same field of invention, Ellenby teaches a three dimensional vision system comprising a computer, a sensor (Fig. 14; GPS, attitude, range; Col. 6, Ln. 45-67), a camera, and a display (Fig. 14; Col. 3, Ln. 60-Col. 4, Ln. 5-16). Ellenby further teaches that a move in the camera causes the perspective of the real scene to change and to account for this change, the computer system communicates with a position sensors and applies rotation, scale, translation algorithms to the camera's new position such that the perspective of the model continuously updates in accordance with the true perspective of the real scene (Col. 4, Ln. 24-40). Additionally, Ellenby teaches the steps of measuring the position and attitude of the camera, recording a first point associated with said measurement, changing either the position state/ attitude state of the camera, recording at least one other point associated with the new position and attitude state and displaying said points superimposed with a captured image and thereby allowing viewer to see the scene while also viewing the model being formed together in the same perspective (Col. 7, Ln. 21-30; since Ellenby teaches a GPS, it is inherent that the position data of the camera reflects the data position of the platform, the posts, the rail and the lasers). In light of the teaching from Ellenby, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the camera of Kakiuchi and Chapman with a data acquisition system/ computer system as taught by Ellenby in order to control the complete system, record the position of the camera and superpose the measured points with a captured image (Ellenby; Col. 7; Ln. 21-31).

With regarding to **claims 2 and 3**, Kakiuchi in view of Chapman and Ellenby discloses the apparatus wherein said surface is selected from the group comprising an object, an area, a

room, a building, an indoor area, and an outdoor area wherein said surface is variable in size (Kakiuchi teaches a handheld three dimensional camera in Fig. 1 which captures a small surface area of an object, a room, an indoor or outdoor area. Furthermore, Chapman teaches the camera crane, which capture a larger surface area of a building, an indoor or outdoor area).

With regarding to **claims** 14, Kakiuchi in view of Chapman and Ellenby discloses the apparatus wherein said data acquisition equipment includes a data acquisition computer system in communication with said data acquisition apparatus, said data acquisition computer system comprising:

means for adjusting said data acquisition apparatus in accordance with user instructions (Ellenby: Col. 5, Ln. 24- Col. 6, Ln. 22; see Fig. 13 wherein a unit calculates equation defining a plane in block 1303 and a unit processes defined area in block 1304 in accordance to the interior and exterior boundaries defined by the user in block 1302);

means for receiving said position data and said ^{digital}~~digital~~ images from said data acquisition apparatus (Ellenby: Col. 6, Ln. 40-67; see Fig. 14 wherein a means for receiving position data is interpreted as the position, attitude and range sensors; a means for receiving ^{digital}~~digital~~ images is interpreted as a camera in Fig. 14);

means for determining three-dimensional coordinates of said surface from said position data and said digital images (Ellenby: Col. 6, Ln. 25-40; means for determining three-dimensional coordinates is interpreted as the algorithms and processor);

means for associating said digital images with said three-dimensional coordinates to produce said three-dimensional data model (Ellenby: Col. 5, Ln. 1-5; Col. 6, Ln. 25-40; means for associating said digital images with said three-dimensional is interpreted as the computer);

memory for storing said position data, said digital images, said three-dimensional coordinates, and said three-dimensional data model (Ellenby: see data store block in Fig. 14);

a display for presenting said three-dimensional data model to said user (Ellenby: see display block in Fig. 14) and, an input device for accepting user instructions from said user for adjusting said data acquisition apparatus (Ellenby: Col. 6, Ln. 37-45; see Fig. 13 wherein block 1301 shows user activating modeling mode; Fig. 14 shows user generated models; the computer system in fig. 14 inherently includes user input devices in order for the system to operate as disclosed).

With regarding to **claims 15**, Kakiuchi in view of Chapman and Ellenby discloses the apparatus further comprising a post-processing computer system for formatting said three-dimensional data model for export to an external application (Ellenby: Col. 5, Ln. 22-50; Fig. 13 wherein a plurality of calculation or adjustment processes in a computer are performed from block 1303 to 1315 before a correct perspective model is sent to a display; see block 1316).

With regarding to **claims 18**, Kakiuchi in view of Chapman and Ellenby discloses an apparatus wherein said user instructions include predetermined data parameters for said three-dimensional data model (Ellenby: see block 1302 of Fig. 13; a predetermined data parameters

for a three-dimensional data model is broadly interpreted the interior and exterior boundaries defined by defined by user).

With regarding to **claims 19**, Kakiuchi in view of Chapman and Ellenby discloses the apparatus wherein said predetermined data parameters are selected from the group comprising area mode, object mode, size of array size of object (Ellenby: see Figs. 5 and 9-12; Col. 4, Ln. 23- Col. 5, Ln. 21; Col. 5, Ln. 44-49), resolution (Ellenby: Col. 5, Ln. 40-43; pixel counting is taking into account for unit calculation in block 1308 Fig. 13), accuracy, and detail (Ellenby: Col. 6, Ln. 45-49; Fig. 13 block 1304 wherein a curve within a defined area is selected thus inherently acquiring more accurate and detail information).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung H. Lam whose telephone number is 571-272-7367. The examiner can normally be reached on Monday - Friday 8AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NGOC YEN VU can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HL

03/28/06


NGOC-YEN VU
SUPERVISORY PATENT EXAMINER